Extending Our Reach

Broadband Office Plan 2011 – 2014

Commonwealth Office of Broadband Outreach and Development

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Executive Summary:

Broadband is a necessity in the 21st century economy. Our worldwide financial system is pillared by online activity, technological advances enable the global exchange of ideas, and businesses which lack access to traditional infrastructure can surmount those market barriers if a high speed internet connection is available. A start-up company in Bangalore, India can reach a global market that would have been inaccessible a decade ago. Singapore, Seoul, and Beijing are now hubs of technological activity that rival Tokyo and Silicon Valley. Beyond the G8 or even the G20, remote areas like Accra, Ghana to Vientiane, Laos have broadband access. Over 68% of the world's mobile subscriptions are in developing countries, and more than 80% of peoples live within range of a cellular network. We are in an Information Age, where the economic reality is that land, labor, and capital are no longer the only essential inputs for production. Without broadband access, our communities cannot grow economically and our citizens will struggle to access the services they rely on.

Kentucky's premier historian Thomas Clark once reflected on the greatest technological achievements in Kentucky's history during his lifetime. His answer was the Rural Electrification Program, which had begun in the depths of the Great Depression, and brought the benefits of 20th century infrastructure to farms and families across the state. Now more than sixty years later, new challenges and technologies are a mirror on the past. As successive generations in America have striven to build upon the achievements of the past, from canals to railroads, highways to superhighways, telephones to computers, and now broadband, with each technological step our society has been transformed, and the distance between successive innovations has narrowed. Today, we "travel" digitally for work, meetings, play, education, and entertainment. The term "mailbox" now has a dual meaning.

The need for broadband service to continue growing in Kentucky is critical. Our broadband commitment to "Putting Kentucky First" will enable the efficient provision of community services, like affordable health care, quality education and building Kentucky's access to a 21st Century economy. Our challenge is threefold:

- To secure infrastructure investments in as many of Kentucky's underserved areas as possible;
- Increase adoption rates, and illustrate the economic costs to areas without adoption; and,
- Ensure that users receive the services and content they are seeking.

In addressing the challenges ahead, funding from the American Recovery and Reinvestment Act of 2009 is playing a key role in aiding technology companies to improve their infrastructure offerings. Through grants from the Rural Utility Service, Kentucky has been awarded over $305 million and is first among all states nationwide in the total dollars being invested. These investments will support access in over 70 counties statewide.

While not every community can be served by ARRA projects, our plan gives communities a partner to work with, that will advocate continued build out and expansion.

Statistics and prior experience show that the struggle for improving statewide adoption rates will be at the forefront of the path ahead. Individuals and communities must have local and varied sources of information on their specific challenges. Outreach will be critical and cooperation across government and private sector lines is essential. Citizens and communities must see the benefits for increased services, and the costs to not securing access.

Lastly, our efforts will encourage and promote new and improved online content. Public administration today is the category which has least utilized these newer technologies and delivery methods. Efforts to inform, encourage and assist others in improving their programs will make it easier for the citizens and businesses alike to engage our state and local governments, and support local businesses.

As our overall economy has shifted, to an online and service based system, our governmental institutions often struggle to keep pace. Public administration in the 21st century will require an increasing online presence. All governmental services, from healthcare to education and even the energy which is used and comes into our homes can be improved through maximizing their online presence. The ARRA has enabled Kentucky to make initial investments in a number of areas, over $16 million is available for creating the first widely used generation of electronic health records, over $10 million is going to support increasing online technologies in the classroom, and significant sums in both public and private funds are being channeled toward smart grid research. The University of Kentucky Research Foundation in Lexington is the recipient of over $2.5 million in grants for the training and development of a smart grid workforce in the state. The Power and Energy Education Institute will provide workforce training for highly qualified individuals certified in power engineering at the graduate, undergraduate and professional level. This curriculum unites faculty from traditional engineering departments, and centers for alternative energy and sustainable manufacturing. Broadband, makes these, and many more innovations and investments possible.

Ultimately, our Kentucky strategic plan for broadband will be created through an open, inclusive and transparent process with all affected parties at the table. Broadband penetration means new jobs and business growth, and personal improvements. Increasing our access to, and our understanding and adoption of, broadband services, will build economic capitol, strengthen public safety resources, improve living standards, expand educational and healthcare opportunities, and raise the levels of civic engagement for Kentucky citizens and businesses.

This document will outline the ongoing "action plan" surrounding our mapping and data collection efforts (a heavily funded and formal element of our grant requirements). It will also address our Broadband Office "strategic planning" to assist and play key roles in strengthening consumer demand and broadband adoption. Our policy-driven efforts will encourage the concept of "farther, faster" and champion vast improvements in adoption percentage and content provision, leading to greater provider demand and desire to expand.

Throughout this document we will provide additional details and understanding, see key statistics and study findings from many sources, and address broad descriptions of our plans to overcome our challenges.

Several key elements of our action and mapping plan include:

- *Continued program development and execution as directed within the grant*
- *Project Team Coordination*
- *Federal Coordination*
- *Finance Coordination*
- *Draft Proposals (Supplemental), formal requests, contracts/MOAs*
- *Reporting (Federal, Internal)*
- *CAI (Community Anchor Institutions) Outreach*
- *Assist with Provider Outreach*
- *Third-Party Outreach (ADD, CPE)*

And, our strategic planning efforts include:

- *Promoting greater adoption as the best incentive we can provide to both the infrastructure and service provider groups to encourage them to go farther and faster.*
- *Understanding why our adoption rates are so low is important, and assisting with a major educational and informational push, one which clearly conveys the benefits and dispels the mystique, is a major element of our intent.*
- *Identifying educational, communication, and marketing requirements as a major component of need, and to establish or assist the groups necessary to reach those who should hear the story.*
- *Understand what those who desire broadband expect to be able to do with it (what application needs they have or would use), and begin to work with state partners to promote the development of those types of applications or applications access.*
- *Developing regional and local broadband planning teams. These groups will be formed with representation from leaders of key sectors in communities around the Commonwealth and coordinated by a regional stakeholder who will then coordinate with the state's broadband planning group. The state will mentor and assist the local and regional teams with their initiatives, and with measurable goals and objectives. In addition, the regional coordination will assist the state in disseminating information regarding broadband initiatives and provide support and technical resources for local initiatives.*

- *Work with our education leaders to develop and implement applications – facilitating education and creating a more educated workforce is key to economic and social development. We hope to also find these agencies and institutions to be partners in our outreach efforts, and in support of our CNIs (community anchor institutions) and last mile.*
- *Focusing on those counties and regions identified as being most in need, having the fewest available resources, and the lowest rates of adoption, we will position ourselves as the central "clearinghouse", or facilitator to ensure that the state has a comprehensive view of broadband activity in order to develop and manage its plan in the most effective and efficient way possible with the funding available. For example, the current lack of infrastructure "reach" to rural student populations is a serious element of need which may have a strong demand, and therefore incentive.*
- *A vital piece of the state's strategic planning effort will be the ability to obtain and utilize data on adoption rates and barriers and determine the benefits of technical assistance conducted by the Commonwealth. The development of survey data was the second portion of the technical assistance proposal.*
- *Inventory existing and planned applications requiring broadband (eHealth, education, GIS-related field work, Smart Grid, Emergency response, etc.).*
- *Identify bandwidth "savings" methods and newer technologies which could better use/deploy bandwidth intensive applications as a means of reducing the bandwidth needs and costs.*
- *Explore the opportunity cost/loss of not having broadband in the Counties from an economic perspective as incentives to others.*
- *Explore incentives for providers to reach across geopolitical boundaries (possibly even state boundaries), and suggest legislation as needed.*
- *Establish a communications basis (actual groups of individuals, web, Facebook, etc.) for continual feedback from and announcements and updates to all.*

Broadband service is all about immediacy of information. Broadband makes possible a "Unified Communications Infrastructure" which can provide voice, video and data all on the same network. With everything on one network, it's easy to add more capabilities as you need them, or as funding becomes available; and, it's far more cost effective and affordable.

Today, broadband is rapidly becoming a standard infrastructure investment for communities, whether provided by the community, public private partnerships, or other means – no different than providing roads and bridges (which are, essentially, what broadband is all about anyway).

According to a 2007 report from the Brookings Institution titled *The Effects of Broadband Deployment on Output and Employment:* "For every one percentage point increase in broadband penetration in a state, employment is projected to increase by 0.2 to 0.3 percent per year".

Increasing our access to, and our understanding and adoption of, broadband services, will build economic capitol, strengthen public safety resources, improve living standards, expand educational and healthcare opportunities, and raise the levels of civic engagement and governmental transparency for Kentucky citizens and business.

Major elements of improving affordable broadband adoption include increased provisioning and use of computing centers, or CAI's (community anchor institutions such as schools, libraries, community colleges, health centers and public safety organizations); improved awareness of the value of broadband; and affordable access rates and computers for home use.

Recently, the FCC updated their eRate program to allow schools and libraries to become "access providers" for their neighborhoods outside of normal student and educational usage. This is a big step, especially when combined with our recent success in obtaining grant funding for numerous Kentucky entities to improve bandwidth to anchor institutions.

Our recent Michael Baker Jr., Inc. research (Kentucky-specific) shows our main usage of broadband to be:

<u>From a business perspective…</u>

- Improved customer service
- Resource efficiencies
- Increased market reach
- Reduced operating costs
- Increased revenues
- More competitive positioning
- Improved staff skills

From a household perspective…

- Internet communications (email, file sharing, VoIP telephone service)
- Internet research (medical and health-related information, government information)
- Online transactions (buy goods and services, pay bills and bank online, government services)
- Personal productivity (access workplace casually or formal tele-work from home, take educational and training courses, operate a home-based business)
- Entertainment and recreation (news and sports information, view or download video media, listen to radio, online gaming)

The key household benefits of adopting broadband are:

- Improving knowledge and skills/enhancing school learning
- Being more connected with the community and world in general
- A better balance of personal and work time
- The ability to earn additional income

The top 4 industries using broadband in Kentucky today are information services (73%), finance & insurance (67%), wholesale trade (66%), and manufacturing (65%).

The bottom four industries for overall broadband use in Kentucky today are public administration (47%), accommodation and food services (57%), administrative and support services (57%), and health care and social assistance (58%).

Today, roughly 90% of the Commonwealth population has access to broadband services; however, only 40% of Kentucky citizens have subscribed to broadband services – many of those who could utilize broadband service have elected not to participate for the reasons noted above. A significant number of those would feel different with a better understanding of the benefit and potential which is enabled by these new communications possibilities, additional exposure to the Internet, and digital literacy.

Outreach efforts to teach or help local communities, businesses, and entrepreneurs to understand how broadband can help increase their success or wealth, while dispelling the perceived complexities of the Internet and computers, will go a long way.

There are now many technologies to bring broadband "pipelines" (bandwidth) to our homes and business, even to our vehicles and field/mobile operations.

These "pipelines" carry various forms of data (Internet access and search engines, telephone service, online television and video services, connectivity to work computers, and access to computer-based applications we use throughout our daily lives for health, government, banking, public safety, education, and other business activities). They enable us personally, and they enable and extend our business efforts.

Today, in stark contrast to just a few years ago, many differing technologies overlap or sit alongside each other which have the capacity to bring broadband to our doors. Several different types of wiring (copper, fiber, coaxial), and wireless (cellular, 4G, microwave), all have the potential to serve up similar products and services to the same consumer areas. Also new today is a strong commitment from government, and financial backing, to assist these providers to better compete, and to extend their infrastructure into locations which before were not economically feasible.

One of Kentucky's key challenges is our rural "last mile". We need to better understand the true economic impact (the "opportunity cost") of not having far reaching and affordable, often mobile, computing and communications access — only then will we truly appreciate the value this new and technology-based future affords.

The granting activity has been clear regarding the need to use middle mile and other backbone elements in support of last mile connections. The Commonwealth's strategic broadband plan will include the use of backbone infrastructure to support the last mile connections and additional federal funding proposals already underway also require and intend to provide this assistance.

Another interesting element of broadband is that providers have historically allowed far more download (from the Internet to your location) speed (bandwidth) than upload speed. It is not uncommon to see a plan include 2 Mb/s down yet only ½ Mb/s up.

This can impact new initiatives such as eHealth and public safety. One of the key findings of the Provider Adoption & Meaningful Use Committee Recommendations to the KHIE Coordinating Council in July, 2010 states that "less than one percent of hospitals have the capacity to electronically send clinical results to EHR's". Certainly, much of this concern

stems from general networking issues and practice out of this scope; however, in this new age, “sending” information is often becoming as important as receiving it, and much of that information is larger in size than in days past, such as clinical X-ray and other imaging photos and public safety’s future which involves uploading photos and video from vehicles.

But if we build it, will they come?

Current barriers to broadband adoption are not as obvious as one might suspect – the largest barrier to broadband adoption is not access to the technology (although it is a large one), but rather a perceived lack of need. This lack of awareness of the intrinsic value of "broadband", combined with a lack of knowledge of how to effectively use it, ranks at the top of the "issues to address" chart.

Interestingly, the June 2009 Pew I&AL (Internet & American Life) Project found that, once people are introduced to broadband, the majority of them report that Internet access is important for their community-related activities including: what is going on in the community, communicating with healthcare providers, government officials or sharing views with others about key issues. Pew found that, despite the recent economic downturn, consumers are twice as likely to cancel cell phone or cable TV service as Internet access.

Second to this perceived lack of need are concerns over security and privacy (44% and 40% based upon our recent Baker research in Kentucky).

Third is affordability, which has ties to computer ownership as well as service plan pricing. Exacerbating this is the fact that Kentucky is heavier than most states in its dependency on wireless technology for remote broadband reach. Wireless technologies today do not carry the same performance characteristics as wire-line options and are typically more costly.

Forty four percent of those with no home broadband do not own, or have convenient access to, a computer. As mentioned earlier, the FCC's eRate changes and funding to better support CAI's will go a long way here. Kentucky ranks third overall in extreme poverty, with an extreme poverty rate of 7.97% (334,000 in extreme poverty, earning less than $5,400 a year to live on). This 8% would greatly benefit from our support of CAI's.

We attempted, unsuccessfully, in our two funding requests, to obtain PC assistance monies to structure a program to bring together vendors and those in need, with our financial assistance bridging the remaining gap. Although we do not have the funding to help financially, it is still our intent to promote and encourage better understanding, good partnerships and pricing opportunities wherever feasible.

Other barriers to broadband adoption include:

- Loss of personal contact with clients
- Connection speeds too slow
- Cost of development/maintenance
- Lack of internal knowledge/expertise
- Incompatibility with existing and "comfortable" systems

Service plans themselves often do not live up to the expectations of their pricing (the average Kentucky broadband residential cost today ranges between $30 and $50) and this is where the next major obstacle comes into play – service access to remote areas. Witness this article from the UK published September 17, 2010…

Carrier pigeons are faster than rural broadband

Photo: GETTY IMAGES

Carrier pigeons have won a race against rural broad band after delivering USB keys more quickly than a computer using rural broadband was able to download.

Ten pigeons carrying USB keys were released from a Yorkshire farm on Thursday. They reached their destination in Skegness, 120 miles away, within an hour and a quarter. Meanwhile, a five-minute video download which was started at the moment of release had only managed to upload 24 per cent of a 300MB file within that time.

Campaigners said the stunt was being carried out to illustrate that broadband in some parts of the UK is still "not fit for purpose". Last year a similar experiment in Durban, South Africa saw Winston the pigeon take two hours to finish a 96km journey. In the same time just 4% of a 4GB file had downloaded.

Following less capable service offerings to rural areas, the remaining obstacle is simple economics.

Roughly 41% of Kentucky's land is populated by only 7.3% of our population, making it economically unfeasible in many areas to provide better coverage using today's technologies.

Newer technologies on the way, such as cellular 4G, broadcast in the 700Mhz band (which provides further reach and better wall penetration) and, may prove the most economical method to someday reach these locations. Their added advantage of being wireless technology also positions them well for GIS, agriculture, public safety, and other remote yet mobile requirements. Additionally, 4G provides a larger "pipe" (more bandwidth), with 100Mb/s the ultimate goal and around 24 initially, many times the current 1-3Mb/s wireless broadband limitations.

It's also not just about the "pipeline". Newer methods allowing twice the information to squeeze through the same size pipe are another avenue of increasing bandwidth while using less resources and cutting costs. Working to understand, communicate and help enable these new technologies is another key goal of the program.

According to the International Economic Development Council's (IEDC) Broadband Impact report of September, 2010, 52% of respondents believe broadband technology can help harness home-based businesses into a "strong economic force", and 43% feel it can be used to influence underserved (low income, elderly, rural) individuals to become entrepreneurs.

The biggest challenge in broadband for local communities – understanding what to realistically expect of the technology and what can, and cannot, be measured. In rural areas, 57% believe fiber (higher speed, wired) networks will have a direct or indirect impact on improving the competitiveness of local companies. Additionally, 55% of IEDC respondents believe that fiber-based broadband technology directly impacts new business attraction to a community.

With regard to wireless broadband, 59% expect broadband to have a direct or indirect impact in attracting new business to an area. Interestingly, only 32% expect wireless broadband (as it exists currently) to improve depressed business districts – this, today, is the realm of wired, higher speed, often more costly, networks.

On a negative note, and adding to the concerns regarding upload speeds, only about 6% of respondents believe the federally recognized bandwidth minimum of 2Mb/s speed[1] will help to lure or retain businesses or revive business districts or communities – success here is perceived to begin in the 20-25Mb/s range. Fortunately, the bulk of the grant funding received by providers expanding in Kentucky are for faster connections, and, the promise of 4G is 100Mb/s long-term, with low to mid 20's initially.

[1] The BTOP Mapping Initiative recognizes just 768 Kb/s as "broadband" for formal reporting purposes.

Our goals moving forward are clear…

In addition to the required basics (mapping, program oversight, etc.), we have now been funded to truly make a difference through several other means.

The most fundamental (and the bulk of our funding) element of our program is to continue the efforts well underway surrounding broadband mapping, with continual updating and improvement of the data collection in the more difficult to survey segments. Expanding on these efforts will allow the calculation and understanding of the true potential of broadband adoption, from both a positive perspective and from an opportunity cost (or loss) perspective where not available, or not affordable. Such understanding will drive greater incentives for business and provide our citizens with a better feel for the embedded technology-based interactions of the future.

Phase one (mapping, planning and research), still in progress and to be expanded throughout the new grant period, allows the Commonwealth to intelligently and efficiently identify the barriers that prevent so many Kentuckians from adopting broadband and reaping its benefits. These baseline and subsequent findings also provide the basis for measuring results. Infrastructure providers have been asked to provide regular updates to their coverage growth.

Infrastructure providers are not compelled to provide their data (unless they participated in grant opportunities) and several simply refuse to do so at this time. Our community work and contacts will help here as well as our outreach to them to show the marketing potential working with us may provide for their efforts. In the end however, we cannot drive them to the placement of technology into areas which show little incentive and must fuel the demand side of the equation as noted earlier wherever financial assistance is not a possibility.

Our mapping efforts identify which providers and technologies "reach" into your area. They also clearly show areas of concern. Our role in reviewing and supporting grant requests of other Kentucky entities to expand their reach has aided in the ability for new and less costly infrastructure to be deployed in many areas. And our work to bring together various parties in communities throughout the state helps to inform and educate providers on the economic potential just over the horizon.

Considerable ongoing effort is required to oversee these initial, base level and required elements of our program and they include:

Project Team Coordination

- *Weekly status meetings and conference calls with project team.*
- *Coordination of internal COT resources as needed for project. Coordination with DGI (COT's GIS/Mapping) staff for mapping tool evaluation and providing*

feedback to Baker (mapping contractor). Also, collections of internal COT finance data for regular financial reporting.

- *Communications coordination between Finance authorities and Baker and/or Murray (Murray State University is our contracted mapping validation consultant) as needed for legal changes/federal requirements.*
- *Managing the creation and maintenance of the required mapping website.*

Federal Coordination

- *Bi-Weekly meetings/webinars with federal authorities (NTIA, FCC) for updates and information exchange regarding mapping project requirements.*

Finance Coordination

- *Meetings/Communications with Finance administrative staff to coordinate timely submission of federally required documentation including quarterly reporting.*
- *Meetings/Communications with Finance legal staff for review and approval of draft letters, contract communications and changes, other issues requiring legal input.*

Draft Proposals (Supplemental), formal requests, contracts/MOAs

- *Drafting formal requests and proposals on behalf project team, including formal federal requests for extensions and submittals, supplemental grant proposals and associated budget documentation.*

Reporting (Federal, Internal)

- *Quarterly Required Federal reporting to meet NTIA and ARRA guidelines, including coordination with project team to gather required information for ARRA reporting due at the end of each quarter. Also, gathering project team information for completion of quarterly performance reports due in the month following the end of each quarter. Preparation and reporting of detailed budget expenditures, detailed provider lists, and activity narratives for all members of the project team.*
- *Monthly (and other as required) internal activity reporting.*

CAI (Community Anchor Institutions) Outreach

- *Development of outreach tools to gather required information from community anchor institutions. Development of survey tools to collect information from hospitals, health departments, libraries, K-12 schools, post-secondary institutions and local community government centers.*
- *Development of and follow-up with contacts and stakeholders of the various CAIs, contacts cultivated through state agencies engaged to help distribute CAI surveys , and follow-up with local individuals in support of that data collection.*

Assist with Provider Outreach

- *Assisting Baker as necessary to help contact/coordinate provider data collection, including facilitation of meetings with appropriate trade associations (i.e. Kentucky Telephone Association) to encourage provider participation.*

Third-Party Outreach (ADD, CPE)

- *Communication and meetings with entities in support of the mapping program, both from within state government and external. Some of this cooperation is necessary to improve provider participation (i.e. ADD districts); in other cases, entities possess data which has been valuable to validate and assist the data collection effort (e.g. - the CMRS/911, State Police, etc. have been valuable for their input on address point data collection).*

So what's next.

There exist two gaps. One represents the differences between the "realistic" expectations of extended broadband reach and affordability, and the "perceived" expectations. For example, our 41.1% of land which is occupied by only 7.3% of our people represents one segment which may not prove economically feasible for providers to extend coverage sooner rather than later, yet perception may be that full coverage for all areas is to be expected quickly.

A second gap compares the distance we must travel, programmatically and technically, from where we are today, toward any realistic expectations of 2014 (the end of the current grant period). Providers of both infrastructure and services (e.g. eHealth, banking, government-based, etc.) have much work to do and this timeframe is narrow.

It is the infrastructure providers who ultimately determine the reach and size of the pipes, and the service providers who hold the promise of added benefit of adoption – content matters. Promoting greater adoption is the best incentive we can provide to both of these stakeholder groups to encourage them to go farther and faster.

Understanding why our adoption rates are so low is also important. Providing and assisting with a major educational and informational push, one which clearly conveys the benefits and dispels the mystique, is a major element of our intent.

Our Kentucky study found that 36% of dial-up (non-broadband) users stated they would sign up for broadband if available; however, while 13% said they would not, 51% were unsure, further supporting the need for education and outreach to encourage understanding and adoption.

According to Pew in October, 2009, just 30 percent of Americans who are 65 or older use broadband, compared with 77 percent of the 18-to-29 age group (which raises an interesting question itself: only 77 percent?).

Remember that fifty percent or so of Kentuckians who have broadband available but do not utilize it? They fall into several categories. Some cannot afford it, or the PC to tap into it; while some simply do not understand the benefits it would enable for their lifestyles or business. We expect to identify educational, communication, and marketing requirements as a major component of need, and to establish or assist the groups necessary to reach those who should hear the story.

One of the core principles of our recent (supplemental) grant was the development/re-development of regional and local broadband planning teams. These groups will be formed with representation from leaders of key sectors in communities around the Commonwealth and coordinated by a regional stakeholder who will then coordinate with the state's broadband planning group.

The local teams, in coordination with their regional and state counterparts, will be responsible for developing strategies for broadband understanding, expansion and adoption in their respective counties and regions.

The state will mentor and assist the local and regional teams with their initiatives, and with measurable goals and objectives. In addition, the regional coordination will assist the state in disseminating information regarding broadband initiatives and provide support and technical resources for local initiatives.

The focus of the state's effort will be in those counties and regions identified as being most in need, having the fewest available resources, and the lowest rates of adoption. We will develop a network of people dedicated to broadband that reaches from Paducah to Washington DC. Community leaders must know what others in surrounding communities and states are doing in order to effectively develop their own plans. In addition, the state must have a comprehensive view of broadband activity in order to develop and manage its plan in the most effective and efficient way possible with the funding available.

Finally, this "pipeline" of information will ensure that all of our communities have equal opportunity for additional funds flowing from Washington or Frankfort.

In addition to the development of the community network, we will focus on developing broadband adoption data collection strategies for communities around the Commonwealth. A vital piece of the state's strategic planning effort will be the ability to obtain and utilize data on adoption rates and barriers and determine the benefits of technical assistance conducted by the Commonwealth. The development of survey data was the second portion of the technical assistance proposal.

Through the use of surveys customized for the needs of the communities and for the state, we can begin to understand not only the barriers that keep people from broadband but what those who desire broadband expect to be able to do with it (what application needs they have or would use). With this information we can begin to work with state partners to promote the development of those types of applications or applications access. For example, Kentucky.gov has repeatedly expressed interest in the development of more mobile apps for iPhone and Android, the University of Kentucky has recently open a new department devoted to mobile applications development, and our new transportation system is to be web-based. Our surveys will help identify the most efficient use of state resources toward that development.

We believe we will find a large segment of the population desiring broadband to further educational needs both at the K-12 and higher educational levels. We will focus on work with our education leaders to develop and implement applications for these purposes to benefit many citizens – facilitating education and creating a more educated workforce is key to economic and social development. We hope to also find these agencies and institutions to be partners in our outreach efforts, and in support of our CNIs (community anchor institutions).

Other initial efforts to plan toward our future include:

- *Working with the eleven entities which have received grant funding to date to improve our infrastructure in Kentucky. Most of these grants were generally to build out and improve DSL, Fiber, and Cable access. Interviewing these recipients to ascertain the business and customer/community benefits expected upon completion is a first step to understanding what they envision the future landscape to provide.*
- *In addition to these recipients, local communities, higher education, and others have a perceived expectation at this time and we need to know that is. How might we assist and/or support their efforts.*
- *Create and organize regional and local broadband planning teams with representation from leaders in key community sectors.*
- *Inventory existing and planned applications requiring broadband (eHealth, education GIS-related field work, Smart Grid, Emergency response, etc.).*
- *Identify bandwidth "savings" methods and newer technologies which could better use/deploy bandwidth intensive applications as a means of reducing the bandwidth needs and costs.*
- *Explore the opportunity cost/loss of not having broadband in the Counties from an economic perspective as incentives to others.*
- *Explore incentives for providers to reach across geopolitical boundaries (possibly even state boundaries), and suggest legislation as needed.*
- *Establish a communications basis (actual groups of individuals, web, Facebook, etc.) for continual feedback from and announcements and updates to all.*

Conclusion…

Infrastructure today includes the digital realm, every bit as much as highways and bridges, traditional utilities, and the other elements which typically go unseen beneath our streets.

We “travel” digitally for work, meetings, play, education, and entertainment. The term mailbox today has a dual meaning.

Our businesses expand their reach far from our local community to regional, national, or even a worldwide presence; and they do so with minimal cost and with considerable speed to market thanks to this new infrastructure.

More, this wave has a large critical mass and its momentum is only accelerating. Our future, in every walk of life, will depend on this infrastructure. Whether available down the hall or down the street, we must all, sooner or later, embrace it, just as we have electricity and our roads.

Those who embrace it faster have an advantage, personally and economically. Understanding the issues and assisting our businesses and citizens in catching this wave as early as possible is our mission.

This new infrastructure enables us to extend our reach, and to do so quicker, and at considerably less cost, than ever before.

For business and household alike, new possibilities and growth are now literally at our fingertips and our Office of Broadband Outreach & Development is leading the way to assist and promote.